

# ARIZONA WATER COMPANY

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July 3, 2020

Mr. Thomas Buschatzke, Director  
Arizona Department of Water Resources  
1110 W Washington, Suite 310  
Phoenix, AZ 85007

Re: Comments on Pinal AMA Fourth Management Plan

Dear Mr. Buschatzke:

Thank you for this opportunity to review the DRAFT Pinal AMA Fourth Management Plan (4MP). Arizona Water Company appreciates how difficult it is to prepare such a plan when so many things are at the tipping point. Many of our comments, while applicable to the Fourth Management Plan, may not be implementable in the current time frame. In those cases, we ask you to consider incorporating these comments into the Fifth Management Plan.

Our enclosed comments are lengthy, but we would like to emphasize two primary concepts in this letter. First, for this or any other management plan to be successful, the challenges facing the Pinal AMA need to be fully understood and clearly documented. The Pinal AMA is a complex groundwater basin with geophysical realities (e.g. large water users crossing AMA boundaries) that make it very different from the Phoenix and Tucson AMAs. These geophysical realities are not just the challenges faced by Pinal AMA water users, but are also the challenges faced by ADWR, the AWBA and the CAGR and also, by extension, Nevada, on-River users, M&I subcontractors and Tribes who are the beneficiaries of much of the water stored in the Pinal AMA. The challenges should reflect that interdependency.

Secondly, at times, the Plan seems to give up on the Pinal AMA leaving the reader discouraged with little hope of moving forward. We cannot give up on the Pinal AMA, and neither can ADWR. We cannot give up on any tools currently available to the Pinal AMA; and ADWR is right when it says, "In the context of a drier future, bolder moves and additional water management tools may be necessary in order to reach management goals". In fact, we would argue that under any circumstances, bolder moves and additional water management tools are necessary not only to reach management goals but to move forward at all. We have provided a list of 16 potential bolder moves for ADWR to consider, moves we believe if ADWR embraces could change the water resource landscape in the Pinal AMA.

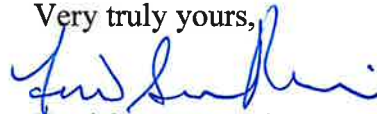
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Thank you again for your consideration. If you have any questions please feel free to contact me at [tsrossi@azwater.com](mailto:tsrossi@azwater.com) or at 602.370.4952.

Very truly yours,



Terri Sue C. Rossi  
Water Resources Manager

jrc  
Enclosure

## **COMMENTS ON FOURTH MANAGEMENT PLAN**

### **CHAPTER 1**

#### **Page 1-1, Paragraph 3**

Please update the information in this paragraph to the latest available information. At the May 27, 2020 GUAC meeting, Ms. Mast told the GUAC that the 4MP would be finalized on December 31, 2020 and become effective on January 1, 2022. Then the 5MP would be finalized on December 31, 2022 and become effective on January 1, 2025.

#### **Page 1-4 through 1-5, Section 1.5**

Please revise the challenges described in the Pinal AMA so they are more “internally focused” as these challenges are the foundation of the 4MP and presumably the 5MP. By this, we mean the following. AWC and City of Casa Grande staff recently attended the Growing Water Smart Workshop where we learned to frame our problem in terms of our ability to take action. Specifically, we were taught to “internalize the blame” instead of externalizing it. Not because there isn’t blame to go around, but because when the problem is defined externally, the solutions end up being actions others must take instead of actions we take ourselves. At the Growing Water Smart Workshop, this made a huge difference in how we defined our own challenges and the solutions we considered.

In this section of the 4MP, the text defines the challenges in the Pinal AMA in terms of groundwater being the primary source of supply and CAP supplies diminishing. ADWR could specifically look at how its actions, and the regulatory structure, contribute to the challenge as described in the text. Some potential examples include:

- Groundwater rights established in the Code entitle water users to pump groundwater indefinitely
- Assured Water Supply (AWS) Rules allowed AWS determinations to be issued based predominantly on groundwater through 2018
- No AWS determinations have been revoked because an assured water supply does not exist
- Recommendations to allocate CAP water have largely been made to areas other than the Pinal AMA
- Transfers of Colorado River water into Central Arizona have been unsuccessful to date
- Water storage permits have been issued allowing entities holding CAP subcontracts and contracts inside the Pinal AMA to store those supplies outside the Pinal AMA

- Tribal water settlements that have resulted in Tribal CAP water being leased to water users outside the Pinal AMA
- Decisions to issue GIU permits in the Pinal AMA including some permits believed to be issued for up to 50 years
- AWS rules have allowed for the use of significant volumes of groundwater for development without requiring replenishment or the use renewable water supplies
- Significant quantities of groundwater have been allocated through the issuance of analyses of assured water supply

ADWR could also refer to Chapter 11 to help develop the challenges section in Chapter 1, as Chapter 11 seems to articulate the challenges with more clarity. Once the challenges are described in terms of actions ADWR has or has not taken, then ADWR can better decide what future actions it should develop to change the trajectory in the Pinal AMA. The 4MP is ADWR's regulatory plan, and the tools used in the 4MP are tools ADWR has control over. This is why it's imperative that ADWR consider its own actions in order to be successful in meeting the objectives of the Groundwater Code.

## **CHAPTER 2**

### **Page 2-4, Section 2.3, paragraph 2**

Please update this paragraph to include the most recent legislative changes that allow Casa Grande and others to accrue long-term storage credits (LTSCs) using existing managed facility permits. Also, Casa Grande no longer delivers effluent to farmland. Please revise the text accordingly.

### **Page 2-12, Section 2.5.4.1**

There is no mention of any artificial recharge in this section even though it refers to artificial recharge in the initial sentence. Please add a paragraph presumably at the end of the section to discuss artificial recharge. In that new section, please mention AWC's Pinal Valley Recharge Project in addition to other constructed and managed recharge facilities.

### **Page 2-14, Paragraph 5**

Consider discussing San Carlos Irrigation & Drainage District (SCIDD) plans to line the San Carlos Irrigation Project (SCIP) canals and the potential impact on canal seepage and consequently the Pinal AMA water budget.

Page 2-27, Section 2.8

When reminding the reader of the Pinal AMA goal, please include the entire goal. In this case, the first half of the goal has been left off, the part that says “to allow development of non-irrigation uses...”.

Please correct all instances where the goal has been incorrectly stated.

Page 2-27, Section 2.8.2

Please include a section about the development of USFs (constructed and managed) in recent times, in particular AWC’s Pinal Valley Recharge Project, and how those facilities will affect the hydrology going forward and perhaps some discussion about how USFs differ from GSFs.

Page 2-27, Section 2.8.2, first paragraph

This paragraph implies that the Pinal AMA is flush with CAP water. Please modify this paragraph to clarify that while these allocations are assigned to entities headquartered in the Pinal AMA, significant portions of their CAP entitlements are used outside the Pinal AMA in addition to being used on reservation, and that those supplies have not been and will likely not be made available to other water users in the Pinal AMA.

Page 2-27, Section 2.8.2, second paragraph

This section states that groundwater can be “saved” for future use. That is not an accurate statement for those water providers subject to A.R.S. 45-852.01 (i.e. WaterBUD). Please revise this section accordingly.

Page 2-27, Section 2.8.3

Please consider using the 100-year (or however many years of data is available) average volume of surface water instead of a single year.

**CHAPTER 3**

Page 3-1, Section 3.1, Paragraph 4

Regarding the fluctuation in agricultural demand, please consider using the cyclical feature in the Pinal AMA groundwater model used by ADWR to describe agricultural demands in the Assured Water Supply program.

Page 3-5 Section 3.2.1

Please update these numbers using July 1, 2019 or depending on the timing July 1, 2020 population estimates from the Office of Economic Opportunity. Alternatively, use the MAG 2018 population data from its most recent projection set. The 2010 Census data is too old. Another alternative is to use the data from whatever source was used to create the population numbers in Table 3-2.

Page 3-6, Section 3.2.4

Please list who the two irrigation districts are: SCIDD and another that is not defined.

Pages 3-10 and 3-11

The text describes the growing water use by dairies describing it as “exponential”. While water use associated with dairies may have increased, it’s important to acknowledge that these dairies provide milk throughout Arizona and not just to people in the Pinal AMA. Regarding turf related facilities, an increase in turf related facility water use does not make for poor choices on the part of Pinal AMA communities but rather it is a natural development of amenities found in most communities in Arizona. Please revise the language to avoid showing a bias either positively or negatively about a particular type of water use.

Page 3-12, Paragraph 2

In this paragraph, ADWR states that 13,000 acres have been extinguished in the Pinal AMA generating 19,600 AF of extinguishment credits. On page 4-4 in Table 4-1, agricultural allotments start at 1,213,480 AF in 1985 and decrease down to 624,366 AF. Please describe how allotments have decreased by nearly half when only 13,000 acres have been extinguished.

Page 3-12, Paragraph 3

Please update this paragraph to include the most recent changes to extinguishment credits as adopted in the Arizona Administrative Code dated January 1, 2019.

Page 3-14, Table 3-5

The totals for 2017 appear to be incorrect, but those numbers do not appear to affect the changes in acres, demand and the related percentages. Please explain how acres in HIDD go up between the First Management Plan and 2017. Please provide some clarification about the purpose of this table. The text implies that ADWR believes demands should decrease as acres decrease. The data does not support this conclusion. ADWR needs to undertake further analyses to understand what might be occurring. What

seems more curious about this data is why the non-district farms are so dramatically declining in acres and water use relative to district areas. Try to refrain from presenting data and using language that appears factual but is really just an opinion or theory about what is occurring.

Page 3-15 and 3-16, Section 3.2.7

Please parse Tribal water use between the Pinal AMA and the Phoenix and Tucson AMAs. The issue of the tribal lands bisecting the Pinal AMA creates a geophysical reality that simply cannot be ignored from a regulatory perspective. On the one hand, the Pinal AMA appears to be flush with CAP water as Table 8-3 would suggest with 410,800 AF of CAP water. The reality is that much of that water is used outside the Pinal AMA. Table 3-6 makes it appear that 150,000 acre-feet of water is used by the Tribes inside the Pinal AMA. On page 3-16, the text states that only 64,021 AF were used for agricultural irrigation inside the Pinal AMA by the Gila River Indian Irrigation & Drainage District (GRIIDD). There are implications to how these geophysical realities are considered in particular when it comes to meeting State firming obligations and AWS rules.

Page 3-17, Table 3-7

There appears to be an error with the number in year 2016 associated with "Offsets to GW Pumping". All the other values in this field are around 400,000 AF and then suddenly the number is 8,107 AF. Please check this and correct if necessary.

**CHAPTER 4**

Page 4-8, Section 4.3.3, paragraph 2

This paragraph describes how BMP farms are using 29% more water than farms on the non-BMP program. This phenomenon is described multiple times in the 4MP. In this paragraph, the text acknowledges that this may be due to many factors. In addition to examining why the BMP farms are using more water, ADWR should consider why the non-BMPs are using less. By only examining the BMP farms, ADWR may be missing some data that is important in understanding the whole picture. Sometimes the text in the 4MP, when discussing this issue, implies that BMP farms are perhaps taking advantage of the BMP conservation program. This is probably not the case.

Page 4-10, Section 4.4

ADWR might consider no longer using the 10% Lost & Unaccounted (L&U) for standard and to start using a more current industry standard like the M-36 methodology for each sector. If ADWR is going to use a 10% L&U standard, even though it is not industry standard, there needs to be a new BMP created to address exceeding the L&U standard, and that BMP should align with the M-36 methodology.

Page 4-11, Section 4.4, Paragraph 2

The language does not take into account that cost could prevent compliance with irrigation system conservation requirements including lining canals. There is no reason to require a registered engineer to prepare or review and to seal and sign-off on a water loss reduction plan. The head of the respective water department, general manager or president of the utility is sufficiently qualified.

Page 4-11, Section 4.5

In the title, REMEDIAL is spelled REDEMIAL.

## **CHAPTER 5**

Page 5-1, Section 5.1, first sentence

This is another example of where the text omits the first part of the goal, “to allow development of non-irrigation uses”. Again, please check the entire plan and make the needed adjustments. In this instance, the goal is further modified to read “preserve the existing agricultural economies in the active management area as long as FEASIBLE” not POSSIBLE. There is a difference between something being feasible and something being possible. Please change the “feasible” to read “possible” to match the actual 4MP goal.

Page 5-2, Section 5.1.2, Paragraph 3

Since the 4MP only lasts a couple of years, ADWR should consider keeping whoever is enrolled in the NPCCP during the TMP also enrolled in NPCCP during the 4MP. Please describe the remedy for a water provider who gets dropped from NPCCP and is unaware it has been dropped until it is too late. Moreover, perhaps ADWR could consider making the NPCCP be the default program. If a water provider wants to be regulated under the Total GPCD program, then the water provider can apply to be regulated under the Total GPCD program.



Finally, ADWR should consider waiving any conditions, like being a designated water provider, for entering a particular type of conservation program. The conservation programs should be comparable. By conditioning entry into a particular program, it appears like the GPCD program is a reward made available only to designated water providers.

Page 5-3, Section 5.2.1, Paragraph 2

It is unclear the purpose of this paragraph. The subject shifts to what looks like conclusions instead of a description of the Municipal Sector which is the title of the section. As an example, it starts by saying large providers are still dependent on groundwater even though CAP water has been available for a while. Then it shifts to a comparison between the small provider program and exempt wells. Finally, it moves to a reference about municipal demand flattening but not because of conservation efforts but because of a bad economy. Please consider rewriting this section to be a description of the Municipal Sector and move the conclusions about the municipal sector to a more appropriate section. If ADWR decides not to revise this section, please include text that acknowledges full use of CAP water by AWC. Also please include text that acknowledge the use of CAP entitlements, held by water providers in the Pinal AMA, outside the Pinal AMA.

Page 5-3, Section 5.2.2

Please show the actual GPCD numbers for 2002 and 2017. Please clarify what maximizing effluent means. Please explain why the text says maximization of effluent may only be accomplished in part through artificial recharge. Assuming CAP water is fully utilized and effluent is maximized, please describe what additional efforts are available other than water conservation (i.e. what does the text mean by. "...efforts include, but are not limited to..." those three things?).

Page 5-4, first paragraph

Roughly half of AWC's demand is met with renewable supplies, and AWC makes up more than half of the municipal demand in the Pinal AMA. 90% cannot be accurate. Please check this fact and correct if necessary.

Page 5-4, last paragraph

It is unclear the purpose of this sentence/paragraph. The sentence doesn't have anything to do with the text above or introducing Table 5-1. We recommend deleting this sentence since it doesn't appear to add anything to the paragraph and only shows the source of information to be inaccurate.

Page 5-5, Table 5-1

There appear to be several inaccuracies in this Table. For example, AWC alone directly delivered 1,833 AF of untreated CAP water to three non-potable customers in 2017. It seems unlikely there were no urban irrigation deliveries in 2017. The effluent numbers move around considerably. This seems counterintuitive. It seems unlikely recovered effluent stopped between 2010 and 2014. Presumably, this is an artifact of only presenting two aspects of effluent use: direct use and recovered effluent. Perhaps a column for total effluent production would be helpful, and a column for unused effluent. Moreover, effluent that has been recharged without a storage permit still constitutes recharge. This should be considered in the water budget.

Page 5-7, Section 5.3.1.3, Paragraph 2

The 10% L&U standard is inconsistent with industry best practices as described in AWWA M-36 Water Audits and loss Control Program. ADWR should revise this requirement and align it with the M-36.

Page 5-10, Section 5.2.1.11, last sentence

From reading this paragraph, it appears the Director can make changes that are inconsistent with the existing statutory provisions just by giving written notice to the Speaker, President and Governor. That seems incorrect. Please check that to be sure. If it is correct, please provide some examples of what an inconsistent change would be.

Page 5-10 and 5-11, Section 3.2

These two paragraphs don't seem to belong in this part of the report. It appears the actual introduction to the Total GPCD program was deleted along with probably the header for the two paragraphs that appear in this section.

Page 5-14, Section 5.2.8.1

Please create a list of the Individual Users similar to APPENDIX 6C.

Page 5-40, Section 5-613

Consider including cleaning up nitrates from groundwater, an acute containment caused by agricultural practices and weak well abandonment rules, a type of remedial groundwater supply. As an example, AWC recently spent \$17 million on a nitrate and arsenic removal plant in its Pinal Valley system.

Page 5-44, APPENDIX 5B

Measurement errors are not lost water. This is water used by the customer; it is just not paid for by the customer or measured by a meter. Through the M-36 program, there are methodologies for determining the degree of under-registration and whether a meter change or repair is appropriate. Please describe under what circumstances would evaporation be counted as Lost & Unaccounted for Water. More specifically, process water is evaporation when used in cooling towers or as part of the treatment processes. In this case, it is not considered lost water. Please revise the language accordingly.

Page 5-49, Category 4: Physical System Evaluation and Improvement

Please consider adding an infrastructure replacement or asset management program. Also, consider adding an enhanced and targeted repair program with a permanent leak monitoring and detection program throughout a distribution system.

**CHAPTER 6**

Page 6-6 and 6-7, Table 6-1

The deliveries of Colorado River water appear incorrect, but without knowing who the industrial users are, AWC can't tell whether its CAP water deliveries are part of the total. If this is not CAP water, but instead "municipally supplied Colorado River water", please describe what that is.

Page 6-6, Section 6.2.2

Please update text to reflect current regulations relative to extinguishment. See R12-15-725.B.

Page 6-7, Section 6.2.2.1, Paragraph 2

The 2017 AF listed for all turf-related facilities is not consistent with the 7,611 AF shown further down in the paragraph or with Table 6-2 on page 6-10. Please correct this.

Page 6-7, Section 6.2.2.1, Paragraph 3

AWC delivered 732 AF of CAP to the Francisco Grande Golf Club in 2017.

Page 6-70 APPENDIX 6A – TURF RELATED FACILITIES

Please create similar tables like APPENDIX 6A for the other 8 categories and a table for individual users.

Page 6-70 APPENDIX 6A – TURF RELATED FACILITIES

Any turf-related facility receiving water from AWC other than Grande Sports World and Francisco Grande Golf Club would be receiving commingled water. Grande Sports World and Francisco Grande Golf Club receive direct use non-potable CAP water from AWC, not recovered CAP or effluent. If Francisco Grande Golf Club did receive effluent, it would be from itself.

**CHAPTER 7**

Page 7-1, Section 7.1, Paragraph 3

The statement, "Most of the groundwater supplies in the PAMA meet federal and state drinking water standards, though a small number of wells have exceeded the EPA National Primary Drinking Water Regulations for nitrates and fluoride," is incorrect. This statement does not reflect that the EPA revised the drinking water maximum contaminant level for arsenic downward from 50 parts per billion to 10 parts per billion in 2005. AWC has 47 wells in the Pinal AMA, and 34 of them are treated for either arsenic and/or nitrates to comply with EPA's National Primary Drinking Water Regulations.

Page 7-9, Section 7.4.4.2, Paragraph 2

The statement, "As of 2015, there were five DAWS providers in PAMA." This should instead say "As of February 2020". The reference to the link is incorrect. Please update the text as follows:

[https://new.azwater.gov/sites/default/files/media/List of Designated Providers 2-19-2020.pdf](https://new.azwater.gov/sites/default/files/media/List_of_Designated_Providers_2-19-2020.pdf)

Page 7-9, Section 7.4.4.3, Paragraph 3

The statement, "As of 2016 the PAMA has 15 permitted recharge facilities," is not current. It should state the most recent number per the ADWR database (14 USF and 3 GSF). The sentence later in the paragraph saying "2.9 million AF as of 2015" is also not current. According to the April 30, 2020 Long-Term Storage Account (LTSA) Summary, there are there are 2.78 MAF of LTSCs in the Pinal AMA .

Page 7-10, Section 7.4.4.5. Please update this information accordingly.

Please consider revising well rules to encourage abandonment for non-use while preserving the right to replace the abandoned well at some point in the future subject to the same replacement rules in place today.

Page 7-12, first bullet

Please consider supporting non-point source control clean-ups like nitrogen-based fertilizers as a potential remedial supply.

Page 7-12, third bullet

ADWR should consider including high TDS and nitrates as important potential water resources. Nitrates are prevalent in the Pinal AMA, and nitrates are an acute contaminant that cannot be delivered to customers. Offending wells must be treated for nitrate removal or disconnected from the system. The 4MP should encourage treatment of nitrates through regulatory incentives. AWC can provide maps and other data to support the development of TDS, nitrates and arsenic as important potential water resources.

Page 7-15, Section 7.5.2.1, Paragraph 1

The text states that, "The quality of surface water in the Santa Cruz River is unknown and variable." Assuming this is correct, please explain how Santa Cruz River water would be suitable for the irrigation of crops which the plan indicates in the same paragraph.

Page 7-15, Section 7.5.2.2, Paragraph 1

This paragraph does not appear to be about water quality. We recommend the entire paragraph be re-written to focus on the quality of CAP water and how that supply can be used from a quality perspective.

Page 7-16, Section 7.5.3, Paragraph 1

"Most of the groundwater in the PAMA is of acceptable quality for most uses." This statement is incorrect. Due to farming in the area and arsenic naturally occurring in the groundwater, several wells in the PAMA do not comply with federal drinking water standards and need treatment to comply with those standards for potable supplies. AWC has 34 wells that require treatment in order to be used as a potable source. Some wells have arsenic values over the federal drinking water standard, because arsenic occurs naturally, while other wells are high in nitrate due to farming activities in the area. These wells can still be used for potable purposes but must be treated to comply with federal and state drinking water standards. Please revise the text accordingly.

## **CHAPTER 8**

### **Page 8-1, Section 8.1, Paragraph 1**

If reclaimed water and effluent mean the same thing, the same term should be used throughout the document to avoid confusion. The last sentence makes “reclaimed water in lieu of groundwater” sound like it’s a type of renewable supply. There is no renewable supply called “reclaimed water in lieu of groundwater”. Perhaps using CAP water and effluent would be clearer. This same issue is repeated in the first sentence of paragraph two and in other parts of the plan.

This chapter of the 4MP should take on protecting stored water from pumping by those who have not stored the water. Clearly, this issue will need to be addressed in the 5MP.

### **Page 8-1, Section 8.1, Paragraph 2**

It is unclear why “augmentation” and “recharge” are defined in this paragraph. The definition given to augmentation says “increasing the availability and use of renewable water supplies such as CAP water and reclaimed water in lieu of groundwater”. The paragraph then defines recharge to mean “the storage of excess water (non-groundwater) supplies for future use....” “Excess water” is not a non-groundwater supply. “Excess Water” is a term used primarily to describe a class of CAP water. It should not be used to describe non-groundwater supplies generally. If there is some confusion about the difference between augmentation and recharge, it would be better just to clarify how they are not the same thing.

### **Page 8-1, Section 8.2, Paragraph 2**

This sentence makes it sound like water providers should use underground water storage instead of direct use. The 4MP should be neutral toward which approach is more suitable for a particular area. If these two approaches are interchangeable, then revise the text to reflect that. Please consider treating these methods similarly within the context of the assured water supply program as well as the 4MP.

### **Page 8-1, Section 8.2, Paragraph 3**

This is another example of where the most important part of the Pinal AMA goal is left out, “allow the development of non-irrigation uses”. Please correct this.

### **Page 8-1, Section 8.1, also Paragraph 3**

In paragraph three, ADWR indicates the objectives of the recharge program in the 4MP are to “enhance water resource management on a localized, sub-PAMA scale.” Using the Recharge Program to manage

at sub-basin level is a substantial change in the regulatory structure and beyond the scope of the 4MP. Moreover, such a change would likely require legislation. Please delete this language and consider focusing on this issue in the 5MP.

Page 8-2, Section 8.3.3, Paragraph 2

There are water management benefits to annual storage and recovery; this paragraph should also mention those benefits.

Page 8-12, Section 8.4, second bullet

Please clarify what is meant by the word “Retain” in this context.

Page 8-8 Figures 8-3 and 8-4

The format of these figures hide effluent recharge in the Pinal AMA as only CAP water was delivered to GSFs. Please revise Figure 8-3 to only include CAP water delivered to GSFs. Likewise, make Figure 8-4 just effluent delivered to USFs. In the text, please explain that except for a small amount delivered to now expired facilities, there was no CAP water delivered to USFs prior to 2020. That will change with the Pinal Valley Recharge Project coming on line in early 2020. The table seems to be missing deliveries to MAR-5. Please research this and correct if needed. Please consider removing facilities that do not exist anymore.

Page 8-9 and 8-10, Section 8.3.1.1

Footnotes 2-3 on page 8-10 aside, ADWR should seriously consider parsing the Tribal supplies between the Pinal AMA and the other AMAs. The text makes the Pinal AMA look like it’s flush with CAP water. It may require additional work to parse the Tribal supplies, but it really should be done. First of all, the analysis needs to take into account leases to non-Tribal parties. Second, the analysis needs to take into account where the Tribes are actually farming. On page 3-16 of the Pinal AMA 4MP, ADWR estimates 64,000 acre-feet were used to irrigate inside the Pinal AMA by the GRIIDD. On page 3-15 of the Phoenix AMA 4MP, ADWR estimates 180,000 acre-feet were used to irrigate lands inside the Phoenix AMA GRIDD.

Avoid using the term “in-lieu CAP use”. The sentence, “In-lieu CAP use has supplemented direct CAP use in this sector” is unclear. Perhaps the text is trying to say “in addition to direct use of CAP water, a large amount of Excess CAP Water has been delivered to irrigation districts through groundwater savings

facilities". Perhaps this sentence could just be deleted altogether as it appears to be the subject of the next paragraph anyway.

It is not unclear how agricultural will respond to reductions in the CAP agricultural pool water in the future. First of all, there must be a delineation between Tribal and non-tribal agriculture. The answer to Tribal agriculture is very different than the answer for non-Tribal. Tribal will continue to use CAP and nothing will change for them. On the other hand, through the DCP, \$60 million was provided to non-Tribal agricultural users to rehabilitate and drill new wells. This action, while a necessary action, leads us to further reliance on groundwater in the Pinal AMA (see comment from Chapter 1, page 1-4 through 1-5, Section 1.5 on Challenges). Agriculture will use those wells at least when the Ag Pool is not available and to the extent M&I subcontractors are unwilling to continue deliveries to GSFs. Beyond that, other factors come into play like farm economics which will determine groundwater use.

Table 8-3 does not include NIA water. And again, the only supplies that should be included in this table should be ones that are available for use in the Pinal AMA. The implications for this go beyond direct use to assured water supply issues and recovery of water bank credits.

#### Page 8-11, Section 8.3.1.1 Tribal Supply of Central Arizona Project Water

It seems like the heading should be bolded here to follow the formatting in the rest of the 4MP. Also under Tribal water supplies, each section needs to include information about to whom the water is leased, how much is used on-reservation in the Pinal AMA and how much is used and/or recharged outside the Pinal AMA.

#### Page 8-11, Table 8-4

This table lists the CAP water delivered and stored by entity. This table should include credits accrued less recovery through 2017. There needs to be a discussion about how much of the water stored in the Pinal AMA will be recovered for benefit and use outside the Pinal AMA except to the degree the GRIC or the Ak-Chin agree to be recovery partners. Per Table 8-6, over 300,000 acre-feet will be recovered for on-River firming and over 440,000 acre-feet for Nevada. The firming goal for the GRIC is 350,000 acre-feet which is only 23 years worth of firming assuming 15,000 acre-feet per year. Assuming the 350,000 acre-feet distributed over the remaining years of obligation (2107-2020 = 87 years), the average firming volume per year would be 4,023 acre-feet. The 350,000 acre-feet may prove insufficient. The only credits available for NIA Priority firming are withdrawal fee credits. There is no indication in this section of the 4MP on how the Tribal firming obligations will be met. ADWR should consider asking the AWBA



to conduct an analysis to determine what share of the NIA Priority firming should be borne by the Pinal AMA versus the Phoenix AMA.

Page 8-12, Sections 8.3.2. and 8.3.3

These two sections need more detail and specificity especially given how important the text describes “reclaimed water in lieu of groundwater” as being in the beginning of the Chapter. While stored CAP may be the largest source of water for Tribal agricultural and Nevada, effluent may be the largest source of water for municipal water providers in the Pinal AMA.

With the exception of Section 8.3.3, section 8.3 does not mention surface water from the Gila River. AWC hopes that Gila River surface water will one day be available for use on urbanized SCIDD lands that historically used Gila River water to meet agricultural demands. Perhaps that’s something ADWR could even facilitate. Table 3-4 shows SCIDD at 125,187 AF of surface water. This volume seems high.

AWS determinations cover a great deal of SCIDD lands. While not built yet, these subdivisions eventually will be constructed. Moreover, existing lands within SCIDD have already urbanized and are currently not benefiting from this supply. There are ways this particular supply could be used to offset existing demands, to be made available for AWS purposes and continue to provide benefit to agriculture. Like effluent, this section deserves more attention.

Page 8-13, section 8.4 top of page

These three bullets are the most encouraging part of the Pinal AMA 4MP. Please expound on the things ADWR will consider particularly integrating AWS, water banking, groundwater replenishment...etc. AWC would like to hear more about this.

Page 8-13, Section 8.5 first paragraph

The numbering following Section 8.5 does not follow like it does in other sections. It goes from 8.5 THE PAMA RECHARGE PROGRAM straight to 8.6.1. Arizona Water Banking Authority. It is as though the rest of 8.5 is missing, and the first section on the AWBA (i.e. 8.6.1) should have been 8.6. Section 8.6.2 and 8.6.3 don’t seem like they should be subsections to the AWBA sections. Maybe these sections belong in 8.5 along with the missing sections about the Recharge Program. Finally, Chapter 8 also seems to be missing a whole section on the CAGR, how it operates and its replenishment obligations in the Pinal AMA or lack thereof and the existence of a replenishment reserve of nearly 500,000 acre-feet largely not intended for use in the Pinal AMA.

Page 8-14, Section 8.6.1

This table should also include pre-firming credits for the GRIC.

Page 8-16, second paragraph, first sentence.

Figure 8-5 and 8-6 appear to be the same data but one is for all AMAs, the other is just the Pinal AMA. Please adjust the titles to be consistent with the only difference being a reference to which AMAs are covered to avoid confusion.

Page 8-19, Section 8.6.1.2 and Page 8-15 Table 8-6

In Section 8.6.1.2, there is no discussion about firming goals for the Pinal AMA and what credits would be applied for each type of firming obligation. Table 8-6 lists credits accrued by funding source, but does not mention how those credits relate to the obligation. Paragraph 1 in Section 8.6.1.2 briefly states that the AWBA does not anticipate the need to firm on-River or CAP M&I supplies in the next ten years, but could have to firm NIA Priority supplies. The Plan makes no attempt to quantify the probable or maximum volume of potential NIA Priority firming that might occur as a whole let alone the part the Pinal AMA should plan to be responsible for. The section should include some text that discusses M&I firming and how many credits have been stored for that purpose and what the probability of using those credits might be. Given the significance of the volume of credits stored and the physical availability issues in the Pinal AMA, please consider providing some discussion on the goals and how those goals will be met and potential additional impacts on physical availability.

Page 8-23, Table 8-7

Just like conditioning entry into a conservation program, incentives to use renewable water supply should apply to all water providers and not just to ones that are designated as having an Assured Water Supply and who are enrolled in the Total GPCD program. Conditioning only prevents the use of renewable water supplies.

**CHAPTER 9**

Page 9-4, 5<sup>th</sup> bullet on second list

Why would WMAP monies from the Pinal AMA be used to fund the AWMUA Water Awareness Month Interactive website? If this is an error, please correct it.

## **CHAPTER 10**

### **Page 10-1, Section 10.1**

In this section, please include some discussion about why the 4MP was not implemented on schedule, why it's being implemented now, how long it will last, when the 5MP will become effective and the rationale for the timing of all of this. The 4MP is ten years late. There should be some explanation as to why.

## **CHAPTER 11**

### **Page 11-5, Section 11.2.4**

This section seems to say storage and recovery is likely not a viable tool in the Pinal AMA. If storage and recovery is no longer a viable tool for those who live in Pinal, then it is no longer a viable tool for those "other users" that the majority of the water has been stored on behalf of. ADWR should address this issue as its own problem. AWC would like to ADWR to consider developing ways of to move as much of these future obligations out of the Pinal AMA as possible and leave those credits in the ground to create physical availability. AWC would like to see ADWR consider policies that encourage the use of CAP water inside the groundwater basins where those entitlements were assigned. Finally, A.R.S. §45-801.01(2) Declaration of Policy contradicts some of the text in this section. ADWR staff should review the Declaration and consider how the 4MP and some of the conclusions reached may be in conflict with the Declaration of Policy.

### **11.2.5 – Treated Effluent Use**

This section needs to be strengthened to match the level of importance effluent plays in the Pinal AMA. Other parts of the Plan indicate effluent is the only renewable water supply remaining for use in the Pinal AMA. Some things to add might include how much effluent can be produced, the limitations of effluent reuse, creating ways to allow the recovery of effluent credits outside the one-mile area of hydrologic impact but still within the service area of a water provider, ways to incentivize effluent use free of conditions.

### **Page -11-7, Section 11.2.8 and Section 11.3**

Chapter 11 is the best chapter in the 4MP. This Chapter really starts to discuss ADWR's action and the actions of others and how those action contribute to the challenges we face in the Pinal AMA stating

things like “conservation alone is not sufficient”, “replenishment is not required for most water demand sectors”, “bolder moves and additional water management tools may be necessary”.

Regarding continuing incentives to use treated effluent in the Industrial sector, please consider that if ADWR encourages effluent use by the Industrial sector, ADWR is simultaneously discouraging it in the Municipal sector. Likewise, the use of effluent by the Industrial Sector will also take away from that supply being made available for assured water supply purposes. This is an example where the sewer and water provider should do what makes most sense, but the water provider and/or the developing city should not be punished if the answer is the best use is to deliver the water to an Industrial user pumping in the same general area.

Many of the solutions listed in this chapter, ADWR already does. AWC agrees we are ready for the bolder moves and additional tools. Understanding this is ADWR’s plan, here are some more bold moves ADWR could consider taking:

1. ADWR should reconsider the purchase and retirement of IGFRs as a useful tool. This is one of the actions ADWR can implement. Table 3-1 shows 648,235 AF of groundwater pumping. Assuming \$2/AF that would create a \$1.3 million revenue stream. At that rate, 130 acres could be purchased each year. By 2050, there would be nearly 3,800 acres. Times 4.5 AF/Acre, that’s nearly 17,000 AFY or 1.7 MAF over 100 years. Over time, other funding sources could be use to supplement the existing \$2 provided by statute. If this program had been implemented in 1980, a great deal would have been accomplished by now. When is the best time to retire an acre of farmland in the Pinal AMA? Today.
2. The AWBA has stored enough water in the Pinal AMA to cover nearly 75 years of shortages. That’s probably enough insurance against shortages. Perhaps the AWBA could be provided with a new authority that would also support M&I subcontractors but related to creating physical availability of groundwater.
3. Create a mechanism for developers in the Pinal AMA to purchase long-term storage credits outside the Pinal AMA in exchange for physical availability inside the Pinal AMA. For example, the new LTSC can then be used to offset existing obligations to on-River reserve. More specifically, developers could purchase LTSCs from Vidler Water Company. Those credits can then be recovered when On-River users call on the AWBA to make that water available. Recovery may be more affordable in locations other than Pinal. The developer is then free to develop in the Pinal AMA on CAP water

stored by the AWBA and avoid the costs of direct delivery and treatment. With changes to the AWBA's authority, this same concept could apply to recovering water for Nevada.

4. Allow water providers and developments for CAWS to rely on physically available groundwater for a certain number of years and only have to secure a non-groundwater supply for the unmet demand portion. This paired with number three above could make for an affordable solution.
5. Remove all conditions for benefiting from incentives to use renewable supplies. For example, do not require water providers to be designated or to be enrolled in a particular conservation program.
6. Modify the concept of an area of hydrologic impact for GSFs as the impact is much more ubiquitous than for a USF. Consider a buffer of some sort around the GSF generally or associated with the water planning areas of the water providers that stored water at the GSF.
7. Treat annual storage and recovery at a GSF the same way as a water treatment plant for Assured Water Supply purposes.
8. Provide an exemption for economic hardship from volumetric accounting requirements that would force water providers to construct parallel systems to isolate renewable water supplies to avoid commingling.
9. Require replenishment of groundwater used by existing Designated Water Providers for all subdivisions approved after January 1, 2019 irrespective of groundwater allowance or extinguishment credits.
10. Require some replenishment of groundwater used by Industrial water rights
11. If effluent is provided for direct use to industrial users, provide access to physically available groundwater to the water provider whose customers generated the waste water.
12. Allocate 100% of the next round of NIA Priority water to the Pinal AMA.
13. Create a long-term pool of CAP water for delivery to irrigation districts using the next allocation of NIA Priority water, Pinal AMA M&I Subcontracts and unused ASLD CAP allocation. Deliver this water to irrigation districts in the summer months reducing the amount of DCP monies needed for new wells.
14. Approve the current water transfer pending along the river for Queen Creek Water Company to pave the way for other legitimate water transfers.
15. Prohibit the use of CAP entitlements, intended for use in the Pinal AMA, outside the Pinal AMA.
16. Work with SCIDD, BIA and others to provide for the use of Gila River water by lands that have urbanized. This could even include a win-win situation where the urbanized lands could make that water available through a GSF mechanism to SCIDD farmers and the water provider could recover

the surface water in the same year/month or whatever accounting structure needs to be implemented.

Page 11-7, Section 11.3, second paragraph

Here is another example where the text seems to be confused about the goal in the Pinal AMA. The text reads, "This publication is intended to serve as a communication tool regarding the effectiveness of the conservation programs in working toward safe-yield... Again, please check the entire plan and make sure the Pinal AMA goal and not the Phoenix AMA goal is listed and that the entire management goal is stated and not just part of it.